FRIENDS' WEEKLY INTELLIGENCER.

VOL. VII. PHILADELPHIA, SEVENTH-DAY, EIGHTH MONTH 17, 1850. No. 21.

EDITED BY AN ASSOCIATION OF FRIENDS.

PUBLISHED BY

WM. D. PARRISH & CO.,

NO. 4 NORTH FIFTH STREET, PHILADELPHIA,

Every Seventh-day at Two Dollars per annum, *payable in advance*. Three copies sent to one address for Five Dollars.

Communications must be addressed to the Publisher free of expense, to whom all payments are to be made.

DOES NATURE PROVIDE A COMPASS?

Our curiosity has often been excited by the fact that birds and different animals find their way so readily to parts far distant, though they are perfect strangers to the regions over which they pass, as well as the place to which they journey; their whole previous life having been spent, perhaps, within the narrow circuit of the place which gave them birth.

The swallow rears its young under our eaves. As soon as they can fly, they are busily engaged in seeking their food, and are ever on the wing. But they never wander very far from the neighbourhood where they entered upon life. Summer, however, draws to a close, and the chilly mornings and evenings of autumn give them warning that a warmer latitude must be sought, and soon these little philosophers hold a consultation, and after a few flights, as if to assure themselves of the requisite strength of wing, or learn something necessary to their success, they, like Abraham leaving his father's house, journey southward. But Abraham knew not where he went. We do not know, however, that we can say this of our little adventurers, for they appear to know well. They do not go as if they thought they would be pilgrims and aliens in a strange land. They seem to expect other towns, and perhaps larger cities, where they can pursue their honest calling, and feel equal, if not superior, to the citizens of their new-found home. If they were experienced mariners, aiming for a distant port, and having the compass for their guide, they could not steer their tiny barks through the stormy elements with greater precision.

The carrier pigeon is frequently taken hundreds of miles from its home, and then, with a billet attached, it is set free. It mounts high and makes several large circles, as if taking observations before it commences the journey; and then, at once, as if it had found a hidden track, it starts off in a straight line; and the rain may beat and the winds blow, but it never forsakes its course until it arrives at its wished-for home.

The camels of the desert are described by travellers as possessing a similar peculiar instinct; those used on frequented routes do not exhibit it. Though there be not the slightest sign of a track, they never fail to choose the right line. One of the camels, taking the lead, advances at first very cautiously, taking now one direction, then another, until he appears to have discovered a true course; and in this he proceeds, followed by the others, and never deviating from the chosen line, until he arrives at his journey's end.

The question presses itself upon us; must there not be some pole star to which these tiny voyagers of the air, as well as the larger wanderers of the desert look, which guides them to their desired haven? Can they know the points of the compass? Is the sun their guide by day and the stars by night? Or is that electric current which points the compass to the north, and furnishes the adventurous traveller with a guide through unknown paths, also the director of their course? Can they inform themselves of its existence, and can they use it, like the mariner, to tell the way?

We can prove that animals are susceptible of electrical impressions. Professors, profound in research, have turned their attention to the connection existing between electricity and the nervous system. We are not speaking of the mysteries of mesmerism, but of the experiments reported in leading scientific works. A small wire, having one end inserted in the nerve of a man's arm, and on the other end having a needle finely balanced, will communicate from the nerve sufficient electricity to render the needle magnetic, and cause it to turn to the north; or, brought into contact with very fine iron filings, will attract them. Take a number of frogs, cut off their legs, place these together, so as to form a voltaic pile, and with this connect a wire, on the other end of which is a needle nicely balanced, and the result will be the same. Such experiments at once prove the intimacy existing between electricity and animated nature.

The habits of birds and animals are studied by farmers and others; and from them they prognosticate an approaching storm. In such cases, is not the electricity of the atmosphere the principal agent in producing the peculiar effects which we observe?

Are we not even ourselves sensible of these influences? Nervous persons are much affected by atmospheric changes, which is owing to their susceptibility of electrical impressions. Some individuals are influenced by the electric current in a peculiar manner. We read of a physician who could only sleep with his head toward the north. The head of his bed was south, and when he retired, he was for a long time restless; and in the morning, when he awoke, he always found that in the night he had turned in the bed, and his head was north. He then had his bed reversed, the head being placed north, and he afterwards found no difficulty in obtaining sleep.

May not the short flights which the swallows, when collected for departure, perform in different directions, before they take their final leave, be their instinctive efforts to assure themselves of the direction of the electric current? And may not the circle made by the carrier pigeon, on the commencement of his journey, be for the same purpose?

And why that cautious exercise of some "mysterious sense" by the camel of the desert, before he takes his devious way over the trackless waste, if not to obtain a knowledge of that unseen power which takes the needle, and teaches it to guide the mariner over the briny deep? Does not the torpedo know at once whether a body is electric or not; and, unless it wishes to communicate a shock, avoid coming in contact with substances that would rob it of its electricity? Why, then, should not some birds and animals know the great electric current, and from it gain the knowledge of direction, which they possess in so superior a degree?—*Rochester Advertiser.*

TEA.

The history of tea, from its first introduction into England, may be read in the history of taxation. It appears to have escaped the notice of nearly all writers on tea, that the first tax is a curious illustration of the original mode of its sale. By the act of the 22d and 23d Charles II., 1670-1, a duty of eighteenpence was imposed upon 'every gallon of chocolate, sherbert, and tea, made and sold, to be paid by the makers thereof.' It is manifest, that such a tax was impossible to be collected without constant evasion; and so, after having remained on the Statute Book for seventeen years, it was discovered, in 1688, that 'the collecting of the duty by way of Excise upon the liquors of coffee, chocolate, and tea, is not only very troublesome and unequal upon the retailers of these liquors, but requireth such attendance of officers as makes the net receipt very inconsiderable.' The excise upon the liquor was therefore repealed, and heavy Customs' duties imposed on the imported tea.

The annals of tea may be divided into epochs. The first is that in which the liquid only was taxed, which tax commenced about ten years after we have any distinct record of the public or private use of tea. In 1660, dear old Pepys writes, 'I did send for a cup of tea (a China drink) of which I never had drank before.' In 1667, the herb had found its way into his own house; 'Home, and there find my wife making of tea: a drink which Mr. Pelling, the Potticary, tells her is good for her cold and defluxions.'

The second epoch of tea was that of excessive taxation; which lasted from the five shillings Customs' duty of 1688 to 1745, more than half a century, in which fiscal folly and prohibition were almost convertible terms. Yet tea gradually forced its way into domestic use. In a Tatler of 1710 we read 'I am credibly informen, by an antiquary who has searched the registers in which the bills of fare of the court are recorded, that instead of tea and bread and butter, which have prevailed of late years, the maids of honor in Queen Elizabeth's time were allowed three rumps of beef for their breakfasts.' Tea for breakfast must have been expensive in 1710. In the original edition of the Tatler, we have many advertisements about tea, one of which we copy:

From the Tatler of October 10, 1710.

"MR. FARY's 16s. Bohee Tea, not much inferior in goodness to the best Foreign Bohee Tea, is sold by himself only at the Bell in Gracechurch Street. Note,—the best Foreign Bohee is worth 30s a pound: so that what is sold at 20s. or 21s. must either be faulty Tea, or mixed with a proportionate quantity of damaged Green or Bohee, the worst of which will remain black after infusion."

In 1745, the last year of the second tea epoch the consumption was only seven hundred and thirty thousand pounds per annum. Yet even at this period tea was forcing itself into common use. Duncan Forbes, in his Correspondence,

which ranges from 1715 to 1748, is bitter against the excessive use of tea; which is now become so common, that the meanest families, even of laboring people, particularly in boroughs, make their morning's meal of it, and wholly disuse the ale, which heretofore was their accustomed drink; and the same drug supplies all the laboring women with their afternoon's entertainments, to the exclusion of the twopenny.' The excellent President of the Court of Sessions had his prejudices; and he was frightened at the notion that tea was driving out beer; and thus, diminishing the use of malt, was to be the ruin of agriculture. Some one gave the Government of the day wiser counsel than that of prohibitory duties, which he desired.

In 1745, the quantity retained for home consumption was 730,729 lbs. In 1746, it amounted to 2,358,589 lbs. The consumption was trebled. The duty had been reduced, in 1745, from 4s. per lb. to 1s. per lb., and 25 per cent. on the gross price. For forty years afterwards, the Legislature contrived to keep the consumption pretty equal with the increase of the population, putting on a little more duty when the demand seemed a little increasing. These were the palmy days of Dr. Johnson's tea triumphs —the days in which he describes himself as 'a hardened and shameless tea drinker, who has for many years diluted his meals with only the infusion of this fascinating plant; whose kettle has scarcely time to cool; who with tea amuses the evenings; with tea solaces the midnights; and with tea welcomes the morning.' This was the third epoch—that of considerable taxation, enhancing the monopoly price of an article, sold to the people at exorbitant profits.

In 1775 the Government boldly repealed the Excise duty; and imposed only a Customs' duty of 12½ per cent. The consumption of tea was doubled in the first year after the change, and quadrupled in the third. The system was too good to last. The concession of three years in which the public might freely use an article of comfort was quite enough for official liberality and wisdom. New duties were imposed in 1787; the consumption was again driven back, and by additional duty upon duty, was kept far behind the increase of the population for antoher thirty years. In 1784 the annual consumption was only 4,948,983 lbs.; in 1787, with a reduced duty it was 17,047,540 lbs.; in 1807, when we had almost reached the climax of high duties, it was only 19,239,212 lbs. This state of things, with very slight alteration, continued till the peace. The consumption had been nearly stationary for thirty years with a duty raised from 12½ per cent, to 96 per cent. Those were the days, which some of us may remember, when we paid 12s. a pound for green tea, and 8s. for black; the days when the convictions for the sale of spurious tea were of constant occurrence; and yet the days when Cobbett was alarmed lest tea should become a common beverage, and calculated that between eleven and twelve pounds a year were consumed by a cottager's family in tea drinking. During this fourth epoch of excessive taxation, the habit of tea-drinking had become so rooted in the people that no efforts of the Government could destroy it. The teas under 2s. 6d. a pound (the Company's warehouse prices without duty) were the teas of the working classes —the teas of the cottage and kitchen. In 1800, such teas paid only an excise of 15 per cent.; In 1803, they paid 60 per cent.; 1806, 90 per cent. And yet the washerwoman looked forward to her afternoon 'dish of tea' as something that might make her comfortable after her twelve hours' labor; and balancing her saucer on a triphod of three fingers, breathed a joy beyond utterance as she cooled the draught. The factory workman then looked forward to the singing of the kettle, as some compensation for the din of the spindle. Tea had found its way even to the hearth of the agricultural laborer. He had lost his 'rye teeth'—to use his own expression for his preference of wheaten bread—and he would have his ounce of tea as well as the best of his neighbors. Sad stuff the chandler's shop furnished him: a commodity brought hundreds of miles from the interior of China, chiefly by human labor; shipped according to the most expensive arrangements; sold under a limited competition at the dearest rate; and taxed as highly as its wholesale cost. The small tea dealers had their manufactured tea. But they had also their smuggled tea. The pound of tea which sold for eight shillings in England, was selling at Hamburg for fourteen pence. It was hard indeed if the arisan did not occasionally obtain a cup of good tea at a somewhat lower price than the King and John Company had willed. No dealer could send out six pounds of tea without a permit. Excisemen were issuing permits and examining permits all over the kingdom. But six hundred per cent. profit was too much for the weakness of human nature and the power of the Exciseman.

From the peace to the opening of the China tea-trade in 1833, and the repeal of the excise duty in 1834, there was a considerable increase in the consumption of tea, but not an increase at all comparable to the increase since 1834. We consumed ten million pounds more tea in 1833 than in 1816, a period of sixteen years; we consumed in 1848, a period of fifteen years, seventeen million pounds more than in 1833. In 1848 we retained for home consumption 48,735,791 pounds. It is this present period of large consumption which forms the fifth epoch.

The present duty on tea is 2s. 2½d. a pound. The experienced housewife knows where to buy excellent tea at 4s. a pound. But there are shops in London where tea may be bought at 3s., and 3s. 4d. a pound. Such low priced teas are used more freely than ever by the hard working poor. The duty is unvarying, but enormously high. It is unnecessary to assume that the cheap teas are now adulterated teas. In the London Price Currents of the present May, there are several sorts of tea as low as 8d. per pound, wholesale without duty. The finer teas vary from 1s, to 2s. In 1833, previous to the opening of the China trade, the price of Congou tea in the Company's warehouses ranged from 2s. to 3s. per pound; in 1850 the lowest current price was 9d., highest 1s. 4d. In 1833, the Company's price of Hyson tea varied from 3s. to 5s. 6d.; in 1850 the lowest current price was 1s. 2d., the highest 3s. 4d. With the amount of duty on tea twice as high in 1850 as in 1833, how is it that tea may be universally bought at one half the price of 1835? How is it that an article which yields five millions of revenue has become so cheap that it is scarcely a luxury? Before we answer this, let us explain why we say that the duty is twice as high now as in 1833.—Before the opening of the China trade tea was taxed under the Excise at an ad-valorem duty of ninety-six per cent on one sort, and one hundred per cent on another, which gave an average of about half a crown a pound. Those who resisted the destruction of the Company's monopoly predicted that the supply would fall off under the open trade; that the Chinese would not deal with private merchants; that the market for tea in China was a limited one; that tea would become scarcer and dearer. The Government knew better than this. It repealed the Excise duty with all its cumbrous machinery of permits; and it imposed a Customs' duty *at per pound*, which exists now, as it did in 1836, with the addition of five per cent. Had the duty of 1833, been continued,—the hundred per cent duty—the great bulk of tea, which is sold at an average of a shilling a pound, would have only been taxed a shilling a pound; it is now taxed 2s. 2½d. By a side wind the Government, with what some persons may call financial foresight, doubled the tax upon the humbler consumers. But it may be fairly questioned whether if the tax of 1833 had continued, the Government would not have secured as much revenue by the poor doubling their consumption of tea. The demand for no article of general use is so fluctuating as that for tea. In seasons of prosperity, the consumption rises several millions of pounds above the average; in times of depression it falls as much below. Tea is the barometer of the poor man's command of something more than bread. With a tax of 2s. 2½d. a pound, it is clear that if sound commercial principles, improved navigation, wholesale competition, and moderate retail profits, had not found their way into the tea-trade, since the abolition of the monopoly in 1833, the revenue upon tea would have been stationary, instead of having increased a million and a half. All the manifold causes that produce commercial cheapness in general—science, careful employment of capital in profitable exchange, certainty and rapidity of communication, extension of the market—have all been especially working to make tea cheap. Tea is more and more becoming a necessary of life to all classes. Tea was denounced first as a poison, and then as an extravagance. Cobbett was furious against it. An Edinburgh. Reviewer of 1823, keeps no terms with its use by the poor: "We venture to assert, that when a laborer fancies himself refreshed with a mess of this stuff sweetened by the coarsest black sugar, and with azure blue milk, it is only the warmth of the water that soothes him for the moment; unless, perhaps, the sweetness may be palatable also." It is dangerous even for great reviewers to 'venture to assert.' In a few years after comes Liebig, with his chemical discoveries; and demonstrates that coffee and tea have become necessaries of life to whole nations, by the presence of one and the same substance in both vegetables, which has a peculiar effect upon the animal system; that they were both originally met with amongst nations whose diet is chiefly vegetable; and by contributing to the formation of bile, their peculiar function, have become a substitute for animal food to a large class of the population whose consumption of meat is very limited, and to another large class who are unable to take regular exercise.

Tea and coffee, then, are more especially essential to the poor. They supply a void which the pinched laborer cannot so readily fill with weak and sour ale; they are substitutes for the country walk to the factory girl, or the seamstress in a garret. They are ministers to temperance; they are home comforts. Mrs. Piozzi making tea for Dr. Johnson till four o' clock in the morning, and listening contentedly to his wondrous talk, is a plesant anecdote of the first century of tea; the artizan's wife, lingering over the last evening cup, while her hus-

banb reads his newspaper or his book, is something which belongs to our own times.—*Household Words.*

WHY EPIDEMICS RAGE AT NIGHT.—It was in one night that 4,000 perished of the plague in London in 1665. It was at night that the army of Sennacherib was destroyed. Both in England and on the continent a large proportion of the cholera cases, in its several forms, have been observed to have occurred between one and two o'clock in the morning. The "danger of exposure to night air" has been a theme of physicians from time immemorial, but it is remarkable that they have never yet called in the aid of chemistry to account for the fact.

It is at night that the stratum of air nearest the ground must always be the most charged with the particles of animalized matter given out from the skin, and deleterious gases, such as carbonic acid gas, the product of respiration, and sulphuretted hydrogen, the product of the sewers. In the day, gases and vaporous substances of all kinds rise in the air by the rarefaction of heat; at night, when this rarefaction leaves them, they fall by an increase of gravity, if imperfectly mixed with the atmosphere, while the gases evolved during the night, instead of ascending, remain at nearly the same level. It is known that carbonic acid gas, at a low temperature, partakes so nearly of the nature of a fluid, that it may be poured out of one vessel into another; it rises at the temperature at which it is exhaled from the lungs, but its tendency is toward the floor, or the bed of the sleeper, in cold and unventilated rooms.

ORIGIN OF THE WORDS BLANKET, WORSTED, KERSEYMERE AND LINSEY WOLSEY.—While Edward III., in 1337, repeated his invasion of Scotland, and "ravaged the country with great fury, burning Aberdeen and many similar towns," as the historian tells us; and while he was engaged in raising an army to invade France in 1338, exacting from the impoverished English people all their wealth to waste in war; and when he was wasting France with war, borrowing money from all foreign princes who would lend him, pawning the English crown which made him a king, that he might still further extend destruction over fertile France; when, in the battles which our historians and poets have so minutely recorded, and loftily sung of, swords clashed with swords, and battle-axes rung upon coats of mail, there was a servant of mankind making a noise in Bristol, which was of infinitely greater service to England than the entire conquest of Europe would have been.

This was Thomas Blanket. The noise he made was not that of the clashing sword, but of the clashing shuttle. His purpose was not to destroy what his country possessed, but to give his country what it did not yet possess—blankets, a covering of comfort to go to bed with, to sleep under, that it may be refreshed in sound sleep, and rise in health and strength to its daily work of making mankind happier by being happier itself. Thomas Blanket was soon imitated by his neighbors, who like him, set up looms in their houses, and made woollen cloth like that he made. The cloth was named by his name; and to this day through all time in this country will this name be known, though nothing else is known of this weaver than that he was the first to introduce the blanket manufacture into England.

No cloth of any kind had been weaved in England before the reign of Edward III. We read that in 1331 John Kemp, from Flanders, introduced the weaving of cloth into England; that the King invited fullers, dyers, and so forth, to come from Flanders and settle here. This policy on the part of Edward was discreet; and viewed in connection with some other of his actions, proved him to have some perception of the sources of national well-being. But he no sooner allowed the cloth manufacture to be implanted in England, than he almost rooted it up by restrictive enactments and oppressive taxes to carry on his wars. The manufacture of the twisted double thread of woolen, called worsted, was introduced into England about this time or soon after.

The village of Worsted, about fifteen miles from Norwich, was the first place where this thread was made, and it took the name of the village. There are no spinning nor woolen manufactures at Worsted now, but from the tombs in the graveyard, and from the benefactions left to the parish, which are recorded in the church, we have proofs that the manufacturers of Worsted were numerous, opulent, and lived there in successive generations, during several centuries.

It may also be noticed here, that after inquiring into the history of the parish and manufacturers of Worsted, we visited Linsey, which gave the name to the fabric known as linsey wolsey, and the Kersey and the Mere close to it in Suffolk, where the workshops were situated, in which the cloth called kerseymere was first made.

The cloth so called now differs from the original, and there is but little trade of any kind in Kersey now. But, as at Worsted, the graveyard and the church have many records of manufacturers long deceased. Their names, though now Anglicised, are common in Suffolk, and are all of Flemish origin.—*Somerville.*

GOOD VENTILATION.—You should have, if possible, a pipe connected with the air without, passing behind the cheeks of your stove, and opening under your fire, about, on, or close before your hearth. They say that from this source the fire will be supplied so well, that it will no longer suck in draughts over your shoulders and between your legs from remote corners of the room. They say, moreover, that if this aperture be large enough, it will supply all the fresh air needed in your room, to replace that which has ascended and passed out, through a hole which you are to make in your chimney near the ceiling. They say that an up-draught will clear this air so quietly, that you will not need even a valve; though you may have one fitted and made ornamental at a trifling cost. They would recommend you to make another hole in the wall opposite your chimney, near the ceiling also, to establish a more effectual current in the upper air. Then, they say, you will have fresh air, and no draughts. Fresh air, yes, at the expense of a hole in the floor and two holes in the wall. We might get fresh air, gentlemen, on a much larger scale by pulling the house down. They say, you should not mind the holes. Windows are not architectural beauties, yet we like them for admitting light; and some day it may strike us that the want of ventilators is a neighbor folly to the want of windows.

MINNESOTA.

The New York Tribune contains the following extracts from a letter written by Governor Ramsey, to a friend at Harrisburg, dated St Paul, July 11. He says:

"I have just returned from the Chippewa country, whither I went, accompanied by the Chippewa agent, to make selection of a site for the new agency buildings of that tribe, who are soon to be removed entirely from the lands in the State of Wisconsin.

"I was absent three weeks on this service; and we determined upon the east shore or Sandy Lake—a considerable sheet of water, which lies a mile and a-half east of the Mississippi river, in about latitude 46 deg. 30 m.—as the proper point for the agency. The lake derives its name from its pretty sandy beaches, which, like most of the lakes of the Territory, are variegated with quartz pebbles, colored in all the shades of red, from a bright vermillion to a brown, including, often, many fine specimens of cameleons and agates. The lake shores are hilly, and it abounds in islands and fish. Sandy Lake is famous among the *voyageurs* and fur-traders, on account of being at the western extremity of the principal old trading route between the Mississippi and Lake Superior; from which latter it is distant one hundred and fifty miles, in a nearly straight line, due west from the *Fond du Lac* of that *Gitcheegoma, or* "Very Great Water," of the Chippewas.

"The vehicles of travel and trade in this route were always, as they are yet, *birch-bark canoes.* These were carried from the Mississippi into the Lake, whose waters they then pursued, until they reached the summit dividing the waters flowing into Lake Superior. Here the canoes are lifted out of the water, *shouldered* over a tedious portage of six miles, and launched again into the Savannah, a branch of the St. Louis river, down both of which streams they glide, and after making two more hand-carriages on this last named river, they float at last on the bosom of the fountain of the lake. Such is the universal mode of travelling in the watery regions toward the heads of the Mississippi. You are aware that 'portage' is the technical term by which these land-carriages between waters are generally known in the northwest.

"When Congress awakes from its shameful indifference, and, by a ship canal around the Falls of St. Mary, shall open to the keels of the lower lake steamships the wide-spread waters of the great lakes, I have no doubt this Sandy Lake route will continue to be a leading line of trade and travel to the Mississippi. But wo then to the bark canoe and the French *voyageur.* The 'conquering arm of steam' will probably sweep them both from the track.

"In selecting Sandy Lake for the agency, I was controlled by circumstances rather than my best judgment. Leech Lake is *the* place; but then that country is the property of the Pillager bands of the Chippewas. This band is in the reception of a very petty annuity; and in consequence of being cut out of the annuities, which their brother chips derive from the sale of their Wisconsin and other eastern lands, they appear to harbor animosity against the Lake and Mississippi bands. Now, with these feelings prevailing, to take the latter into the very heart of the Chippewa country, and there pay them larger and more liberal annuities than the Pillagers themselves get, would be wrong in itself, and productive only of mischief. I hope Government will authorize me to *purchase* the privilege of colonizing the Lake bands entirely west of the Mississippi. A treaty of this kind would make it better for all parties—

for the Indians, the Government, and the whites.

"In my route up on this expedition, in addition to the agent and the boat's crews, I was accompanied by our friend Judge Cooper, our interpreter, and W. F. Corbit, of Dauphin county, Pennsylvania. We took bark canoes at Crow-wing, a noted point in this region, and proceeded into and through Gayash or Gull Lake, Lake Sibley, Lake Eccleston, and Little Boy Lake, into Leech Lake. By this route, and through this ganglionic chain of lakes, the Mississippi can be reached in much shorter time, and with much less travel than by following the river, which here makes a great bend, as you will observe by looking at the map. Leech Lake is situated within the interior of this bend. Its shores have a very crooked outline, which, with its nine bays, give it an oblong circumference of about one hundred and sixty miles. It abounds in the finest fish, which the Indians located here, catch in nets in summer, and dry for winter use. This forms a principal portion of their subsistence; while *wild rice* grows in the shallow bays of the lake, and *maple trees* are found in abundance on its banks—thus supplying the red man with the necessaries, comforts, and even luxuries of life. The Chippewas make a great deal of maple sugar, and are as fond of it as are white children. Unfortunately, their wars and characteristic improvidence subject them often to want and great suffering, notwithstanding the bountiful provision of nature.

"After spending a day or two at Leech Lake, we commenced our return voyage, intending to describe a water circle and go back by the course of the Mississippi. Making a portage of half a mile, we once more, after a considerable absence, found ourselves floating on its waters, in *Cass Lake*, so named from General Cass, whose exploring expedition on the Upper Mississippi, in 1820, terminated here. It is, you know, the great expansion of the Mississippi river, about 149 miles from its source in Lake Itasca. It is worthy of note, that so far north as 47 30, the missionaries had fields of *winter* wheat growing, and all kinds of planted vegetation looked fine. Cass Lake is in several respects a pretty sheet of water—it is full of islands, and is about sixteen miles long. The sturdy arms of our *voyageurs* sent us rapidly along into another beautiful watery ganglion called Lake Winnebigoshish, a few miles below; and thence we made our way with all possible speed down the river to Sandy Lake, at the outlet of which the Mississippi is 331 feet wide, and thence, after fixing the site of the agency, to Crow-wing and home.

"On the whole, we had a pleasant time; but I think the party, nevertheless, were well contented when the journey was ended. If the sun's rays in so northern a latitude do strike the earth more obliquely than further south, it is sometimes broiling hot for all: for the days are longer, and during the short nights the ground and the atmosphere have hardly time to cool thoroughly. And it being a sandy as well as a watery region, it is a sort of mosquito's paradise, equal to the bayous of the Mississippi delta; and the animals, I assure you, are as bilious as a settler in a cypress swamp at the South. I stood it pretty well, that is moderately well; for the German phlegm, which forms a portion of my composition, keeps me from being readily excited by trifles. But some of the more nervously constituted of the party, during this journey of 600 or 900 miles, nearly gave up the ghost, under the joint persecution of sand-flies, blue bottle-flies, and the mosquitoes aforesaid."

FRIENDS' INTELLIGENCER.

PHILADELPHIA, EIGHTH MONTH 17, 1850.

It is probable that our readers are generally aware before this, that what was called the Compromise Bill in the United States Senate, has been defeated by having thrown out of it all its most important provisions. Since then separate bills have been introduced for the admission of California as a State, and to define the boundaries of Texas. The former has already passed the Senate by a large majority. It was opposed by the extreme supporters of slavery.

The difficulty with Portugal, alluded to some time since, it is now asserted will be settled amicably, or at least without a resort to force.

We acknowledge the receipt of Twenty Dollars from Lydia Seal, Wilmington, Del., for the relief of the sufferers by the late conflagration, which has been applied to that object by the relief committee.

DIED,—On the 13th inst., at his residence in Philadelphia, ISAAC CLENDENON, in the 69th year of his age, after a severe illness of about three weeks, which he bore with great calmness and Christian fortitude, having the happy assurance that his day's work had been done in the day time. By this event his survivors are solemnly admonished to be also prepared for the final summons.

DIED, on the 30th of 7th mo., 1850, EMILY, daughter of Darlington and Richard T. Hoopes, aged 5 months and 18 days.

THE LATE ADMINISTRATION.

Numerous Treaties of importance appear to have been negotiated by this Government during the last six months, of which but little has reached the public, except on the authority of a mere rumor. With the late British Treaty, which reflects so much honor on the country, and which we ourselves have emphatically denominated "the Great Treaty," the public has been officially made acquainted.

We have learnt that Treaties have also been made by the Secretary of State with the Sandwich Islands, with New Grenada, with Peru, and Mexico.

The Treaty with the Sandwich Islands was negotiated with Mr. Jarvis, the Commissioner on the part of his Hawaian Majesty. It has been, we understand, unanimously approved by the Senate, and intelligence of the exchange of the ratifications, which was to take place at Honolulu, may be soon expected in the United States.

This treaty, we understand, is not only a Treaty of Commerce and Navigation, but contains a Postal arrangement with the Sandwich Islands, and a provision for extradition of fugitives from justice.

Of the other Treaties we have no precise information; but we understand that they are considered highly important to the commerce and navigation of the United States.

Besides these Treaties, negotiated by the Secretary of State, under the direction of the late President of the United States, the Convention for the Rail-road across the Isthmus at Tehuantepec, and the several Treaties with Nicaragua, San Salvador and Guatemala, with the negotiations for conventions of accession to the Central America or British Treaty, will forever mark the era of President Taylor's administration as one of the most successful for its diplomacy in the history of this country.

Nat. Intel.

The following table, carefully compiled from official sources, exhibits the number of patents issued from the Patent office at Washington during the year ending May 28, 1850, to the several States of the Union. It will be observed that the distribution is largely in favor of the free over the slave States; five of the latter having received only a single patent each, while all of them combined have had less than two-thirds as many as Massachusetts, and less than one-third the number awarded to New York.

The Boston Atlas, remarking upon the striking difference between the Northern and Southern States as displayed in this table, very pertinently asks, "whether we shall blast the enterprise of the citizens of the new territories by the introduction of an institution, whose mere presence destroys more than nine-tenths of the inventive genius of the people."

SOUTHERN STATES.		NORTHERN STATES	
New York	308	Maryland	26
Pennsylvania	156	Virginia	14
Massachusetts	139	Missouri	10
Ohio	97	Kentucky	7
Connecticut	58	Alabama	7
New Jersey	24	Georgia	5
New Hampshire	20	Louisiana	5
Indiana	19	Tennessee	3
Vermont	19	South Carolina	2
Illinois	16	North Carolina	1
Maine	11	Mississippi	1
Rhode Island	9	Texas	1
Michigan	4	Arkansas	1
Wisconsin	3	Florida	0
Iowa	3		
Delaware (essentially free)	2	Slave States	83
	888	Free States	888
		Foreign	25
		Dist. of Columbia	11
		Total Patents 1849–50.	1003

SINGULAR CIRCUMSTANCES.

A remarkable freak of a maniac, is noticed by the *Trenton True American* as having occurred at Bordentown on Sunday morning. The locomotive which was to bring the morning train from Bordentown to Trenton was missed, and the engineers procured another—when they reached Trenton they discovered the missing one fast in the switches, blowing off steam at a great rate.

"When they came to it they found a man trying to rebuild the fire, and the water and cinders splashing over him and the engine. It seems that a crazy man, hailing from New Hope, Pennsylvania, had come here from Bordentown on Monday evening, and returned in the same train. Some time during the night, or early in the morning, this madman had gone to the engine, kindled a fire, put on one of the pumps which had been taken off, and not finding the oil, had melted tallow, with which he greased all the apparatus, and putting on the steam, came up to this city like a streak of 'greased lightning.' The engine had been managed very well, as it was not at all injured;

but it is supposed he did not know how to back it when it got in the switches here, which were locked. We understand he must have passed one or two switches before reaching this station. He said he took the engine to see how fast it could be made to go. He was taken back to Bordentown, and sent thence to his friends. His escape from destruction was very lucky for him."

EARTHQUAKE AT SMYRNA.—A correspondent of the Newark Advertiser, in a latter dated April 17th, gives the following interesting missionary letter:

The last fortnight has been a period of fear and anxiety on account of earthquakes. There have been three principal shocks, sufficient to crack walls, to stop clocks, and to throw down fragments from ruined or unfinished buildings, beside many small shocks. Great numbers of the people fled in terror from the city, especially a week ago yesterday, many thousands went out upon the neighboring hills and spent the night, chiefly resorting to a church about two miles from the city; and thousands more did not close their eyes that night, because a certain monk had predicted that on that day the city would be destroyed. It pleased God to prove him a false prophet, as that night passed without any shock whatever.—During the week, however, several others occurred, one of which was nearly as strong as the first one. Saturday, the 13th inst., was a very gloomy day. The sky was lowering, the air seemed to be filled with exhalations, and shocks were occurring during the whole day, one in the morning being quite severe. We felt called upon to come together, and to seek Divine protection by special prayer.

The mission families all met at 5 o'clock, and spent a solemn hour in humbling ourselves before God, and in imploring his special protection. During the very hour I suppose there were thousands of people hastening out of the city, and after our meeting we all remarked that we had never seen so gloomy and portentous a sky. Still we felt a comfortable assurance that our Heavenly Father was near and ready to listen to our prayers; and it pleased him to do so. During the night the weather became clear, and the next day was a beautiful one; and from that hour to this, I have not felt a single shock, though others have felt slight ones. We trust that the worst of it is over. May we learn heavenly wisdom both from judgments and from mercies!

THE DISCOVERIES OF THE PRIMITIVE AGES.

To those who have given but little attention to the science of astronomy, its truths, its predictions, its revelations, are astonishing; and but for their rigorous verification, would be absolutely incredible. When we look out upon the multitude of stars which adorn the nocturnal heavens, scattered in bright profusion in all directions, without law, and regardless of order—when with telescopic aid, thousands are increased to millions, and suns and systems and universes, rise in sublime perspective, as the visual ray sweeps outward to distances which defy the powers of arithmetic to express, how utterly futile does it seem, for the mind to dare, to pierce and penetrate, to number, weigh, measure and circumscribe, these innumerable millions? It is only when we remember, that from the very cradle of our race, strong and powerful minds, have in rapid and continuous succession, bent their energies upon the solution of this grand problem, that we can comprehend, how it is, that light now breaks in upon us, from the very confines of the universe, dimly revealing the mysterious forms, which lie yet half concealed in the unfathomable gulfs of space. When I reflect on the recent triumphs of human genius, when I stand on the shore of that mighty stream of discovery, which has grown broader and deeper, as successive centuries have rolled away, gathering in strength and intensity, until it has embraced the whole universe; I am carried backward through thousands of years, following this stream, as it contracts toward its source, till finally its silver thread is lost in the clouds and mists of antiquity. I would fain stand at the very source of discovery, and commune with that unknown but powerful mind which first conceived the grand thought, that even these mysterious stars might be read, and that the bright page which was nightly unfolded to the vision of man, needed no interpreter of its solemn beauties, but human genius.

Go with me, then, in imagination, and let us stand beside this primitive observer, at the close of his career of nearly a thousand years, (for we must pass beyond the epoch of the deluge, and seek our first discoveries among those sages, who were permitted to count their age, not by years, but by centuries,) and here we shall learn the order in which the secrets of the starry world slowly yielded to long and persevering scrutiny. And now let me unfold, in plain and simple language, the train of thought, of reasoning and research, which marked this primitive era of astronomical science. It is true that history yields no light, and tradition even fails, but such is the beautiful order in the golden chain of discovery, that the bright links which are known, reveal with certainty, those which are buried in the voiceless past. If then it were possible to read the records of the founder of astronomy, graven on some column of granite, dug from the earth, whither it had been borne by the fury of the deluge, we know now what its hieroglyphics would reveal, with a certainty scarcely less than that which would be given by an actual discovery, such as we have imagined. We are certain that the first discovery ever recorded, as the result of human observation, was on the *moon*.

The sun, the moon, the stars, had long continued to rise, and climb the heavens, and slowly sink beneath the western horizon. The spectacle of day and night, was then as now, familiar to every eye; but in gazing there was no observation, and in mute wonder there was no science. When the solitary observer took his post, it was to watch the moon. Her extraordinary phases had long fixed his attention. Whence came these changes? The sun was ever round and brilliant—the stars shone with undimmed splendor—while the moon was ever waxing and waning, sometimes a silver crescent hanging in the western sky, or full orbed, walking in majesty among the stars, and eclipsing their radiance, with her overwhelming splendor. Scarcely had the second observation been made upon the moon when the observer was struck with the wonderful fact, that she had left her place among the fixed stars, which on the preceding night he had accurately marked. Astonished, he again fixes her place by certain bright stars close to her position and waits the coming of the following night. His suspicions are confirmed—the moon is moving; and what to him is far more wonderful, her motion is precisely *contrary* to the general revolution of the heavens, from east to west. With a curiosity deeply aroused, he watches from night to night, to learn whether she will return upon her track; but she marches steadily onward among the stars, until she sweeps the entire circuit of the heavens, and returns to the point first occupied, to recommence her ceaseless cycles.

An inquiry now arose, whether the changes in the moon, her increase and decrease, could in any way depend on her place among the fixed stars. To solve this question required a longer period. The group of stars among which the new moon was first seen was accurately noted, so as to be recognized at the following new moon, and doubtless our primitive astronomer hoped to find that in this same group the silver crescent, when it should next appear, would be found. But in this he was disappointed; for when the moon became first faintly visible in the western sky, the group of stars which had ushered her in before, had disappeared below the horizon, and a new group had taken its place; and thus it was discovered that each successive new moon fell farther and farther backward among the stars. By counting the days from new moon to new moon, and those which elapsed while the moon was passing round the heavens from a certain fixed star to this same star again, it was found, that these two periods were different; the revolution from new to new occupying 29½ days, while the sidereal revolution, from star to star, required 27⅓ days.

This backward motion of the moon among the stars, must have perplexed the early astronomers; and for a long while it was utterly impossible to decide whether the motion was real or only apparent—analogy would lead to the conclusion that all motion must be in the same direction, and as the heavens revolved from east to west, it seemed impossible that the moon, which manifestly participated in this general movement, should have another and a different motion, from west to east. There was one solution of this mystery, and I have no doubt it was for a long while accepted and believed. It was this. By giving to the moon a slower motion from east to west, than the general motion of the heavens, she would appear to lag behind the stars, which would by their swifter velocity pass by her, and thus occasion in her the observed apparent motion, from west to east. We shall see presently how this error was detected.

The long and accurate vigils of the moon, and the necessity of recognizing her place, by the clusters or groups of stars among which she was nightly found, had already familiarized the eye with those along her track, and even thus early the heavens began to be divided into constellations. The eye was not long in detecting the singular fact, that this stream of constellations, lying along the moon's path, was constantly flowing to the west, and one group after another apparently dropping into the sun, or at least becoming invisible, in consequence of their proximity to this brilliant orb. A closer examination revealed the fact, that the aspect of the whole heavens was changing from month to month. Constellations which had been conspicuous in the west, and whose brighter stars were the first to appear as the twilight faded, were found to sink lower and lower towards the horizon, till they were no longer seen; while new groups were constantly appearing in the east.

These wonderful changes, so strange and inexplicable, must have long perplexed the early student of the heavens. Hitherto the stars, along the moon's route, had engaged special attention; but at length certain bright and conspicuous constellations, towards the north, arrested the eye: and these were watched to see whether they would disappear. Some were found to dip below the western horizon, soon to re-appear in the east; while others revolving with the general

heavens, rose high above the horizon, swept steadily round, sunk far down, but never disappeared from the sight. This remarkable discovery soon led to another equally important. In watching the stars in the north through an entire night, they all seemed to describe circles; having a common centre, these circles grew smaller and smaller as the stars approached nearer to the centre of revolution, until finally one bright star was found, whose position was ever fixed. Alone unchanged while all else was slowly moving. The discovery of this remarkable star, must have been hailed with uncommon delight by the primitive observer of the heavens. If his deep devotion to the study of the skies, had created surprise among his rude countrymen, when he came to point them to this never changing light hung up in the heavens, and explained its uses in guiding their wanderings on the earth, their surprise must have given place to admiration. Here was the first valuable gift of primitive astronomical science to man.—*Mitchell's Planetary and Stellar World.*

NEWSPAPERS.—W. C. Bryant, speaking of newspapers, said:—"Books are the precious metals in masses—newspapers coin them for general use, put them into the most convenient forms, and pass them from hand to hand."—"Newspapers," he said, "are the ushers of books; who would know when a book is published, but for the friendly information of the newspaper?" He added, "that he had been sometimes tempted to regret that the wise, witty or eloquent things which appeared in these 'folios of four pages,' as they were called by Cowper, should not be inscribed on more durable tablets, instead of going the next morning to wrap parcels or light kitchen fires: but he was fully satisfied with their fate, when he reflected that they had first been read by thousands, and whatever was good in them had passed into the general mind."

METHOD OF SILVERING IRON, AS PRACTISED BY MAJOR JEWREINOFF.

The combination of iron with carbon (cast iron) from the ease with which it melts, and the consequent possibilty of taking the finest impressions of form, has come into very extensive application. The art of founding converts cast iron into enormous arches, columns, cannons, and also into the most delicate bracelets, earrings, &c. Unfortunately, the moist atmosphere very soon alters the surface of these objects, and it is found necessary to coat them with paint, which gives the cast iron, the color of which is itself not very attractive, the appearance of mourning.

In the present state of the art of founding, cast iron might easily be substituted for bronze were it not for its sombre appearance, which entirely excludes it. This disadvantage may, however, be entirely overcome, from the possibility of plating it with silver; in fact, cast iron may be readily silvered, and equally as well as copper and bronze. Some successful experiments which Major Jewreinoff, of St. Petersburg, had made on this subject, induced him to give a short description of the method he had employed.

The liquid for silvering is prepared in the following manner:—Cyanide of potassium prepared according to Leibig's method, is introduced into a stoppered vessel, and freshly prepared pure chloride of silver, still in a moist state, added; the whole being covered with water, and shaken violently for some time at the ordinary temperature. An excess of chloride of silver is taken, and should a small quantity of it remain undissolved, a few pieces more of the cyanide are added after some time, taking care, however, to avoid having an excess of the latter salt, but always a small quantity of undissolved chloride at the bottom of the vessel. This last circumstance is important, because when the liquor contains too much free cyanide of potassium, it is easily decomposed, and moreover does not silver so well.

Before employing it, it is filtered, and is thus rendered perfectly clear, iron and a little chloride of silver remaining on the filter. He effects the plating by means of a galvanic battery of one pair, consisting of a zinc and a coke cylinder, which are separated from each other by means of an earthern diaphragm. The pair are placed in a glass vessel, and diluted nitric acid is conveyed into the earthen diaphragm. Experience has shown that the best mixture for the coke cylinders should consist of five parts, by weight, of finely pulverized coal, and two parts common rye flour.

When the cylinders are dry they are placed in earthen crucibles, in the lids of which there is an aperture for the escape of gases, and are then heated to redness. Those cast-iron objects may be most easily silvered which have not been painted, as the removal of the paint from the surface of the metal is somewhat difficult.

The cleansed object is immersed in the silver solution, and connected with the zinc pole by means of a conducting wire, and a platinum plate immersed in the liquid at some distance from the object to be silvered, and connected with the coke cylinder. A plate of cast iron, of four square inches surface, is generally completed in half an hour.

CALCIUM LIGHT.

Professor Grant exhibited in Washington on Monday night his calcium light from the Capitol. The National Intelligencer says:

The lamps from 3d street to 14th street were not lighted, the Commissioner of Public Buildings (Mr. Mudd) desiring to observe the effect of this light as regards applicability for street lighting. The result of this experiment was most satisfactory, and elicited the highest encomiums from numerous groups of ladies and gentlemen who thronged the avenue for the purpose of observing the exhibition. The night was quite dark, and the stores closed, yet from this single light the avenue was beautifully and equally illuminated throughout its entire extent, from the Capitol to the Presidential Mansion. Persons in any portion of this extensive street could see to read and tell the time on the dial-plate of a watch. The light was kept burning for one hour, and the rays, steadily directed upon the avenue, gave a uniform light, without vacillation or change of intensity; altogether demonstrating that this light is unequalled for street illumination, and, if its cost is not an objection, (and we are assured that it is not,) it must, *ceteris paribus*, be speedily introduced for that purpose into all our large cities and towns.

FAST TRAVELLING OF RAILROADS.

A correspondent wishes to know why the speed of railroad travelling in this country is not increased as in England. He states that the average of speed here is but fifteen miles an hour, while in Great Britain it is not less than forty. We think he is somewhat mistaken. The average speed in the United States is certainly twenty miles an hour, while in England it is not over twenty-five. He has confounded the express trains with the ordinary trains, or he would not have set down the speed of the British railroads at forty miles. Some of the trial trains here run at a velocity of seventy miles an hour: but this is by no means a common occurrence, the ordinary speed by these trains being about thirty miles.

The principal railroads of the United States run their passenger trains as fast as those of England are run, and it is only on roads of secondary importance that the British trains have the advantage over ours. The speed of the first class cars, on the London and Liverpool road, is twenty-five miles, including stoppages. The velocity of the evening trains between here and New York is about twenty-five miles including stoppages; on the Erie railroad it is between twenty-five and thirty; and on the Great Western, between Albany and Boston, it is very nearly as great. Occasionally trains have been run on nearly all these roads at a velocity even greater than the usual express trains in England; and on trial trips, a speed has been attained nearly, if not as great as on the British roads. That a higher velocity is not ordinarily employed is owing to the increased danger of accidents, and to the rapid ratio at which the wear and tear of the road progresses under the accelerated speed.

We can best illustrate this augmented wear and tear by endeavoring to obtain a definite idea of what a speed of seventy miles per hour means. Seventy miles per hour is one hundred and five feet every second; that is, the passenger is carried thirty-five yards between the beats of a common clock. When two trains having this velocity pass each other, the relative speed is doubled; and if one of the trains was seventy yards long; it would flash by in a single second. If the driving wheel of the locomotive is seven feet in diameter, the wheel would revolve five times in passing over the thirty-five yards, consequently five times every second. To produce a single revolution of the wheel, the piston rod must move backwards and forwards once; hence its motion will divide every second into ten equal parts. The valve must in like manner move ten times every second; and as steam escapes at every opening of the valve, there must be ten such escapes in every second.

But a locomotive has ten cylinders, and the discharge from one is intermediate between two successive discharges from the other; consequently, there are twenty discharges of steam in every second, each puff having the twentieth part of a second between that which precedes or follows it. Passengers have heard these discharges when the locomotive is moving slowly at starting, and will recognise them by their sounding like a quick cough, or gasp. Some idea of the enormous rapidity of the working parts of the engine may be obtained by remembering that, at a speed of seventy miles, there are twenty of these coughs per second.

Nor is this all. Though the driving wheels of large locomotives are seven feet in diameter, the bearing wheels are not more than three. But a driving wheel revolves, when at a speed of seventy miles, five times each second, hence the bearing wheels must revolve twelve times, A cannon ball, it has been computed, moves at a rate of 26,800 feet per minute, which is equal to 300 miles per hour; a train, therefore, moving at 75 miles an hour, a speed frequently obtained by trial locomotives, for a short dis-

tance, has a velocity only four times less than a cannon ball.

In stopping such trains the difficulty is much greater than would be supposed from the mere difference in speed between a fast train and an ordinary one. The momentum increases in the ratio of the square of the speed, and consequently, in checking a train, if the speed has been doubled, four times as many breaks will be required; if trebled, nine times as many. At all times the stopping of a train increases the wear of the rails, in consequence of the resistance they give to the momentum, a fact which may be seen from the polished and worn appearance of rails near station houses. Now, in checking a train that moves seventy miles an hour this wear is nearly nine times greater than when a train moves at the ordinary speed of twenty-five miles.

The accelerated velocity also affects the machinery of the locomotive, the cars, and every thing connected with the train; and augments the cost at a rate much greater than would be popularly supposed. The danger of accidents increases also with the increase of speed.

It would be almost impossible to stop a train moving at a rate of seventy miles, in time to prevent a collision with another train coming from an opposite direction at an equal velocity. For instance, if the trains first saw each other when three miles apart, only seventy-five seconds would elapse before they met, or about one minute and a quarter; if when two miles apart, fifty seconds; if when one mile, only twenty-five seconds. The momentum, in case of any such collision, would crush a locomotive of thirty tons in weight as if it were a mere egg-shell.

These considerations have induced the managers of railways to discountenance a very high rate of speed; and we think the decision a proper one, and hope it will be adhered to. Thirty miles an hour is fast enough for an ordinary traveller to get over the ground.—*Railway Times.*

MORRIS STIRLING'S NEW METALLIC MIXTURES.

There are few things more remarkable than the total change of properties produced when two or more metals are made to combine together so as to form what are called alloys. This change is so marked, that it is often impossible to predict, from the known properties of the component metals, those of the alloy. We see this very distinctly in the long known cases of brass, an alloy of copper and zinc, in all its varieties; of bronze, bell-metal, gun-metal, and gong-metal, which are alloys of copper and tin; of type metal, a mixture of antimony, lead, and tin; and many others.

But although many useful and valuable alloys are known, when we consider the great number of simple metals—of which nearly fifty have been discovered, while at least twenty are sufficiently abundant to be applied to practical purposes; and further, that any two metals may combine in many different proportions; and lastly, that very often an exceedingly small proportion of one metal will give to another entirely new properties—when we consider these things, it is obvious that the existing alloys can form only a very small proportion of the immense number that may be obtained, many of which may probably turn out more valuable than any yet known.

Mr. Morries Stirling, a gentleman thoroughly qualified for the task by a scientific education and long practical familiarity with chemistry, has, within these few years, paid much attention to the alloys, chiefly of the most important of all metals—iron. The results he has obtained are of the highest practical importance, and afford a signal proof of the truth of what we have stated—namely, that multitudes of valuable alloys remain to be discovered, and will richly reward the time and labor bestowed in such investigations.

The reader is probably aware that the best hammered or malleable iron is nearly pure iron, and that cast-iron and steel are compounds—alloys they may almost be called—of iron with small proportions of carbon or charcoal. Cast-iron contains more carbon than steel, although in both the quantity is small, varying perhaps from ½ or 1 to 4 or 5 per cent. Cast-iron is fusible, hard, brittle, unelastic. Steel is also fusible and hard, but it is much tougher, and highly elastic. Here we see the powerful effects of so small a proportion of carbon; for iron is nearly infusible, soft, and very tough, when free from carbon.

Now Mr. Stirling has found that cast-iron may be rendered very tough, without losing its fusibility, by simply alloying it with a certain proportion of wrought or malleable iron. He takes, we shall say, a quantity of any species of cast-iron—no matter for the general character of the result of what kind—and has it run from the blast-furnace into moulds containing a certain proportion of scrap-iron. The pigs thus formed are then melted, as usual, in a cupola, and run into the desired moulds for castings. Thus is produced what he calls his *toughened cast-iron.* His object, in the first experiments, was to improve the inferior, weaker, or more fluid irons to an equality with the better kinds; but he did not expect the remarkable result actually obtained—namely, that all irons are thus brought to a kind of average strength and toughness *far above that of the best cast-iron.* The strength of cast-iron is measured by the weight necessary to break a bar 1 square inch in section, and 4 feet 6 inches long between the supports, when suspended to the middle of the bar. The highest result obtained by Mr. Hodgkinson with the best (Blaenavon) cast-iron was 578 lbs; but the average, as given by the same anthority, is 454 lbs.

Now Mr Stirling has obtained the very high result of 868 lbs; while Mr Rennie, using Mr. Stirling's method, obtained that of above 900 lbs. Later experiments have given a still higher degree of improvement; so that the maximum increase of strength over that of average cast-iron (454 lbs.) is 120 per cent.: and that which may on all occasions be calculated on is from 60 to 70 per cent., yielding an average of about 750 lbs. as the breaking weight of an inch bar 4 feet 6 inches between supports. All sorts of cast-iron, if the due proportion of wrought scrap for each be ascertained, may be brought to this very high average of strength. Of course the improvement is, relatively to the original quality of the iron, not so great in the best as in the inferior sorts, but even in the best it is very great. This method is not a source of increased cost, for the cost is only greater in reference to the iron used. Thus Scotch pig-iron. at L.2, 10s. per ton, when the expense of the scrap-iron, besides the royalty of the patentee, is added to it, costs, as toughened cast-iron, about L. 3, per ton. But it is now 60 per cent. stronger than iron sold L.3 15s. and L. 4 per ton.

It is not easy to estimate the importance of this discovery, which has been confirmed by many of the leading iron masters, who are now using the patent under Mr Stirling's license. For all castings where strength is required, such as beams, girders, pillars, the advantage is so great and obvious, that it is hardly necessary to do more than allude to it. We obtain, at a cheaper rate, with the same weight of casting, nearly double the strength, which for railway bridges,&c. is an invaluable result. But further, where the actual strength is more than sufficient to resist the strain to which it is exposed, we can attain that strength, by using a much less weight of metal, and consequently at a still further reduced price.

Mr Stirling has produced an admirable alloy of iron, intended as a substitute for that of copper used in bells. It is, even under the patent one-third cheaper than ordinary bell-metal, exceedingly hard, and not more brittle. It is wonderfully sonorous, and the tone of bells made of it (of which the writer possesses two) is superior to that of any bells of the same pitch we have ever heard. It is rich, full, musical, and singularly prolonged. Messrs. Mears, the great London bell-founders, have taken a license for this alloy.

The same metals, in a different proportion, yield an alloy which takes a remarkably high polish and silvery lustre, and will probably be found advantageous for speculum metal.

There is another alloy of iron with one or more of the metals above-mentioned in certain proportions, designed for gun-metal. It is made of different qualities, according to the purpose for which it is intended. The tensile strength of two of the kinds was compared with that of gun-metal made at Woolwich. The metals were cast and tried under similar circumstances. Of the Woolwich gun-metal, the average of many sorts was 11 tons per square inch; while that of Mr Stirling's gun-metals was 16 tons per square inch.

With zinc for a basis, Mr Stirling has made many alloys of admirable properties. One, with an adjunct of copper, makes excellent bell metal. Another, with manganese besides copper, produces one having many of the qualities of gold. A third, with nickel and copper, furnishes a metal resembling silver. The second of these is found highly suitable for metallic pens.

It is gratifying to consider these discoveries as the result of diligent application to experiment, and to learn that the merits of the discoverer are likely to be duly rewarded. We find that his improved irons have obtained the approbation of the government commissioners for investigating the properties of iron for railway purposes.

PLEASURE OF READING.—Of all the amusements that can possibly be imagined for a working man, after daily toils, or in the intervals, there is nothing like reading a newspaper or a book. It calls for no bodily exertion, of which already he has had enough, perhaps too much. It relieves his home of dullness and sameness. Nay, it accompanies him to his next day's work, and gives him something to think of besides the mere mechanical drudgery of his every day occupation; something he can enjoy while absent, and look forward to with much pleasure. If I were to pray for a taste which would stand by me under every variety of circumstances, and be a source of happiness and cheerfulness to me through life, and a shield against all its ills, however things might go amiss, and the world frown upon me, it would be a taste for reading.—*Herschel.*

PHILADELPHIA MARKET.

Flour.—Old stock at $5½, fresh ground $5⅜. Extra Flour $5 62½ and $7 00. Rye Flour sells at $2 87.

Corn Meal—Is held at the same price.

Wheat.—There is a limited demand for red at 110 a 114; good white at 116.

Corn—Is scarce at 61 for good Southern yellow, white is worth 63c.

Rye.—Penna. is held at 65c.

Oats.—Are now quite dull; prime Pennsylvania from store sells at 48; Southern is worth 37 a 28.

Cattle Market.—The offerings of beef cattle for the week were about thirteen hundred head. Beeves are selling at from $5 00 to $7 00 per 100 lbs. Hogs.—There were 500 in the market, and sold from $5 00 to $5 50 per 100 lbs. Cows—About 200 in the market and sold at prices ranging from $15 to $38. Sheep and Lambs.—The former from $2 to $4, the latter from $1 to $3, according to quality.

P. STACKHOUSE, Jr., Conveyancer, S. E. corner of Fourth and Branch Sts., Philadelphia.

He will attend to the purchase and sale of Real Estate, the investment of money in Ground Rent and Mortgage Securities, and the collecting of Ground Rent, House Rent and other Interest Money.

8 mo. 17—6 mos.

NOTICE.—The Grammar School under the care of Green Street Preparative Meeting, will be reopened on the first Second day in the Ninth month next, under the care of Rebecca W. Moore as Teacher. Application may be made to

David Ellis, No. 137 Franklin St.
W. M. Levick, No. 140 Dillwyn St.
Lydia Longstreth, No. 272 N. Third St.
Jane Johnson, No. 264 N. Fourth St.
Philadelphia, 8th mo. 8th, 1850. 4t.

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Two doors above Market street, Philadelphia,
Manufacturers Importers and Dealers in Paper, Books, Stationery, Bonnet Boards, Paper Hangings, &c.

Have on hand an assortment of all the standard

SCHOOL BOOKS,

Which Shool Teachers and Country Merchants are particularly invited to examine. Also, a general assortment of

PAPER,

Comprising Foolscap, Letter, Note and Bill Paper, Commercial and Packet Post, Flat Cap, &c. Also, Hardware, Grocer's Wrapping, Envelope and Printing Paper, and Blue and White Bonnet Boards, &c.

STATIONERY,

Consisting of German and American Slates, Slate Pencils, Lead Pencils, Gold Pens, Steel Pens, Quills, Ink, Writing Sand. Pocket Books, Wallets, Bankers' Cases, Plain and Embossed Envelopes, Letter and Note size. Transparent Motto Wafers, Bristol Boards, Perforated Boards, Ink Stands, Sealing Wax, Indelible Ink, Ink Powder, Bill Files, &c., &c.

MARRIAGE CERTIFICATES engraved by Copper-plate on the best English Parchment, and adapted to Marriages according to the order of Friends, either before the Meeting, or at private houses. Published and for sale by the subscribers. Price, $2.00.

WALL PAPERS, BORDERS, &c.

At 10 cents a Piece. and upwards.

We have connected with our establishment an ex ensive Paper Hanging manufactory, and have recently much enlarged our sale rooms. Keeping them entirely separate from our other business on the second floor. We offer our spring assortment of new patterns of French and American Wall Papers, at prices from ten cents a piece and upwards. Our stock comprises a large assortment of very desirable and neat patterns for Parlors, Halls, Vestibules, &c., also gilt and embossed papers, velvet papers, imitations of the various kinds of wood and marble, pannel papers, gilt and velvet Borders, Fire Board patterns Window Shades, &s. &c., wholesale and retail.

☞ Papering done in the city or country by careful and experienced workmen, and all work worranted.

☞ A liberal discount made to wholesale dealers.

WM. D. PARRISH & CO.,

Nos. 4 and 6 N. Fifth St., two doors above Market, up stairs 4th mo.

FRIENDS' DRY GOODS STORE.

CHARLES ADAMS,

No. 79 Arch Street, between 2d and 3d Streets, Philada.

Where can be obtained, at any time, the most desirable kinds of FANCY AND STAPLE GOODS, suitable for FRIENDS, and at the lowest prices.

P. S. This store is also well established for Linens and Furnishing Goods generally.

6th mo. 8—tf

WANTED.—A situation in a Friends' Store by a young man. A country store would be preferred. Address W. C. M., Byberry P. O., Philada. Co., Pa. 6th mo. 22—1t.

LIFE AND CORRESPONDENCE OF WILLIAM AND ALICE ELLIS. Published this day—

Life and Correspondence of William and Alice Ellis, of Alston, by James Backhouse, revised and corrected by the author for the American edition.

HENRY LONGSTRETH,
Cheap School Book Depository, 347 Market St.

ALSO,

Journal of Margaret Woods. Guide to Peace.
Memorials of Rebecca Jones. Religious Poetry.
Letters, &c., of the late John Barclay.
Gurney's Hymns. Memoirs of Maria Fox.
Life of William Allen, 2 vols. 8vo.
Marsh's Life of George Fox. Youthful Piety.
Life of T. Fowell Buxton.
Sewel's History, two volumes in one.
Memoirs of Samuel Fothergill.
Lindley Murray's Life.
Letters of Sarah Lynes Grubb.
Penn's No Cross, No Crown, &c. &c. 4th mo 27

FEATHERS! FEATHERS!—10,000 pounds of Feathers, comprising all qualities. For sale, wholesale and retail, at the lowest cash prices, by HARTLEY & KNIGHT, 148 South Second street, 5 doors above Spruce.

The Bedding Department of our business is in the second story, where we now have, ready made, or will make to order Beds, Bolsters, Pillows, Mattresses, and Cushions of all kinds. We also keep constantly on hand, a good assortmeht of Ticking, Blankets, Marseilles Quilts, Comfortables, Sacking Bottoms, &c. The first floor and basement have been appropriated to the sale of Carpeting, &c., among which are Brussels Carpetings, Tapestry Carpetings, Imperial Three Ply, Ingrain Carpeting, from 25 cents to $1 60. Stair Carpetings, from 10 cents to $1. Entry Carpetings, from 25 cents to $1 25. Rag Carpetings, from 25 to 40 cents. Also, Oil Cloths and Mattings, at all prices. For sale by

HARTLEY & KNIGHT
148 South Second street, 5 doors above Spruce, Philad.
4th mo. 20th.—tf.

O. EVANS' FIRE AND THIEF PROOF SAFES FOR MERCHANTS, STOREKEEPERS, and others; a full assortment of various sizes now in store. The above CHESTS are warranted equal to any other make for security against FIRE OR BURGLARS, having WITHSTOOD THE TEST OF BOTH without injury or loss to the owners, in any instance.

ALSO—In store and for sale:

SEAL AND LETTER COPYING PRESSES AND BOOKS.

TRUCKS for moving Boxes, Bales, &c., in Stores.

DRUGGISTS' PRESSES with Cylinders and Pans.

PACKING LEVERS for Dry Good Stores, &c.

PORTABLE SHOWER BATHS, of new construction, suitable for warm or cold water.

REFRIGERATORS for keeping MEATS, BUTTER, MILK, &c. in dining room, hall, or cellar.

WATER FILTERS, for purifying muddy or bad WATER, caused by RAINS, LIMESTONE, MARL or other causes.

OLIVER EVANS,
3d mo-tf. **61 S. Second** 2 door below Chesnut st.

BENJAMIN H. LIGHTFOOT, HATTER, having improved in health, has resumed his business in connection with James Nickerson, of the late firm of Nickerson & Bishop, at No. 41 North Second street, where an assortment of Hats for Friends and others, will be kept, or made to order.

The patronage of his friends and former customers is respectfully solicited.

N. B. Hats for boys kept on hand, or made to order.

J. S. NICKERSON,
B. H. LIGHTFOOT.
3d mo. 20-1y.

EYRE AND LANDELL,
FOURTH AND ARCH,

Have established a store where Friends now resort to obtain Dry Goods adapted to their wants.

E. & L. always keep the best stock of Cap Goods. Our motto is Good Goods at low prices. 108 Cashmere Shawls at 44 cts. 4th mo. 27

NEW SPRING GOODS FOR FRIENDS.—JOHN J. LYTLE, S. E. cor. Seventh and Spring Garden Sts., would respectfully inform Friends that he has on hand a large stock of goods particularly adapted to their use, consisting in part of neat Prints, Lawns, Bareges, low priced De Laines and Barege De Laines.

Silk Lustres from 25 to 37½ cts. 4-4 Book Muslin Hdkfs, 25 cts. Book Muslins, 31 and 37½ cts., usual price 50 cts. A lot of Barcelona Hdkfs. for 37½ and 50 cts., much lower than regular prices. India Silk Shawls, Gauze, Cap Crape, Kid and Lisle Thread Gloves, &c.

Those in want are particularly invited to call and examine his stock. 4th mo. 27—3m.

CHESTERFIELD BOARDING SCHOOL FOR BOYS, situated on the Crosswicks Road, three miles from Bordentown, N. J.

The Summer Term will commence on the 20th of Fifth month, 1850. The course of Instruction will embrace the usual branches of an English education.

TERMS.—Sixty Dollars per Session of Twenty-two Weeks, for tuition, board, washing and mending, stationery and lights, the use of all necessary books, &c., except mathematical books and instruments—one-half payable in advance, the other in the middle of the term.

HENRY W. RIDGWAY.

Stages running between Bordentown and Crosswicks pass the school daily. 5th mo. 18—3 m.

HAT STORE.—Kimber & Carpenter, Wholesale and Retail Hat and Cap Manufacturers, No 19 North Fourth Street, opposite Commerce, offer for sale Hats and Caps, made and trimmed in the best manner on the most reasonable terms.

EMMOR KIMBER, Jr.,

having for more than twenty years paid particular attention to the manufacture of Plain Hats, feels confident that his experience in this branch of business will enable him to give his customers entire satisfaction.

3d mo 2

UNION VALE BOARDING SCHOOL for Boys and Girls. Situated in Oswego Village, Union Vale, Dutchess County, N. Y., about 12 miles east of Poughkeepsie. Rufus Potter, Jr., and Phœbe W. Potter, Principals.

The Summer Term of this Institution will commence on the 6th of 5th month next, and continue twenty-two weeks.

The charges for board, washing, and tuition will be $46 per term.

No extra charges except for books and stationary, which for the accommodation of the school, will be kept on hand.

The location of this institution for healthiness, is equalled by few, and surpassed by none in the country.

A first rate Female Teacher is engaged for the Summer Term, who will have the particular charge of the Girls.

For further particulars inquire of either of the Proprietors, personally, or by letter directed to Oswego Village, Dutchess Co., N. Y.

ALFRED MOORE,
RUFUS POTTER, Jr. } Proprietors
Union Vale, 3rd. mo. 19, 1850.

JACOB HAMER, Jr., (Successor to Jacob Hamer & Son. Tailors,) will be thankful for the patronage of his friends and the friends of the late firm at No. 22 North Fifth Street, having for years paid particular attention to Friends clothing, feels assured he will be able to give his customers satisfaction.

4th mo. 4-tf.

M. A. SHAW, No. 13 North Seventh street, invites the attention of Friends to her assortment of China, Glass and Queensware, comprising a variety of patterns of French China, White and Gilt Dinner and Tea sets, and Toilet sets, and these at lower prices, with a general assortment of other goods in her line, which will be sold at reasonable prices, and sent to any part of the city. 5th mo. 5th.